

Colonial Pipeline Company


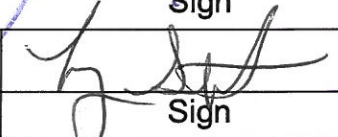


Environmental Sampling Plan


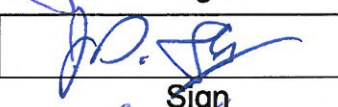
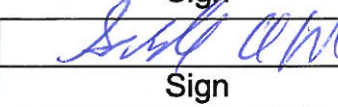
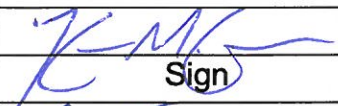

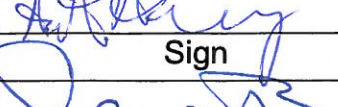


INCIDENT: CR 91

LOCATION: Pelham, AL

DATE & TIME PREPARED: September 16, 2016 17:31 pm

Prepared by:		Joseph P. Nicotette	9/16/2016
	Sign	Print	Date
Reviewed by:		Terry Stilman EPA	9/16/2016
	Sign	Print	Date

APPROVALS:

Colonial ENVL:		JAMES MCCORMACK	9-16-16
	Sign	Print	Date
Colonial PSC:		Jeffrey Tills	9-16-16
	Sign	Print	Date
Colonial IC:		GERALD Boock	9/16/16
	Sign	Print	Date
FOSC:		Kevin Eichinger	09/17/16
	Sign	Print	Date
SOSC:		Josh Tharrien	9/17/16
	Sign	Print	Date
LOSC:		Aub Harvey	9-17-16
	Sign	Print	Date
LOSC:		Danny C. Ray	
	Sign	Print	Date
LOSC:		John W. Wilkerson	9/17/16
	Sign	Print	Date

CR-91 INCIDENT, PELHAM, ALABAMA ENVIRONMENTAL SAMPLING PLAN

Overview

This document presents the initial environmental (i.e., surface water and sediment) sampling and analysis plan.

EPS developed a sampling plan to collect water and sediment samples at selected locations in Ponds 1, 2, and 3; Peel Creek; and the Cahaba River. Sampling locations were targeted, based upon potentially affected areas and environmental sensitivity. Sampling locations include up-gradient background and downgradient samples relative to the leak site.

The EPS sampling team was assembled and mobilized to the sampling locations the afternoon of September 10, 2016. Efforts will be made to initially collect water samples on a daily basis. In addition, an attempt to collect one sediment sample co-located with the water samples at each location will be conducted. Adjustments to this schedule will depend on emergency response actions, weather, sample analysis results, agency input, and site observations. This is a living sampling plan document and will evolve with further input from USEPA, USFWS, ADEM, Colonial Pipeline, EPS, Inc., and the Cahaba Riverkeeper.

Additionally, a fresh oil sample was collected from a frac tank that contained oil product collected from the pipeline on September 10, 2016. An attempt will also be made to collect a source sample from the pipeline. These samples are being collected to develop a detailed understanding of the characteristics of the source oil released.

Initial Sampling Program

The Initial Sampling Program, with approximate locations as depicted in **Figure 1**, was comprised of a plan to obtain paired surface water and sediment samples on the first/second sampling day (including a duplicate sample). The general locations and samples are presented in the table below (note, that these may vary as discussed above).

SW_01/SD_01	Pond 1	Water and Sediment Sample
Not Assigned	Pond 2	Due to vapors, area was inaccessible. Samples will be collected once the area becomes accessible.

SW_02/SD_02 (Behind "V" dam)	Pond 3	Water Sample
SW_03/SD_03 (In Pond to left of "V" dam)		Water and Sediment Sample
SW_04/SD_04	Upstream of small drainage confluence from Pond 3 on Peel Creek (background)	Water and Sediment Sample
SW_05/SD_05	First downstream station of small drainage confluence from Pond 3 on Peel Creek; upstream of Boom Location 1	Water and Sediment Sample
SW_06/SD_06	Upstream on Peel Creek, farthest up-gradient Peel Creek sampling point (background)	Water and Sediment Sample
SW_07/SD_07	Upstream of Peel Creek Confluence (background) on the Cahaba River	Water and Sediment Sample
SW_08/SD_08	Second downstream station of small drainage confluence from Pond 3 on Peel Creek; downstream of Boom Location 1	Water and Sediment Sample
SW_09/SD_09	Downstream of Peel Creek Confluence on Cahaba River	Water and Sediment Sample
SD_10	Dry Creek Bed at mouth of Peel Creek, at confluence with Cahaba River	Sediment Sample
SD_11	Dry Creek Bed approximately 100 feet upgradient of SD-10	Sediment Sample
SW_12	In small drainage from Pond 3 just above (about 50 feet) the confluence with Peel Creek	Water Sample

SW_13	In Peel Creek, about 150 ft downstream from the confluence of the small drainage ditch from Pond 3	Water Sample
SW-14	In Cahaba River, just downgradient of confluence with Peel Creek.	Water Sample
FRESH PRODUCT	Recovered product from frac tank	Oil Product

Analytical Testing

Surface water (SW) and sediment (SD) samples will be analyzed for BTEX and TPH-GRO. The oil product sample(s) will be analyzed for BTEX, TPH-GRO, TPH-DRO and PAH's. Initial samples will be analyzed on a "rush" basis. The analysis frequency will be modified as sampling progresses. The sampling and test methods are provided in **Attachment A**. The analytical laboratory is Analytical Environmental Services, Inc. (AES), Atlanta, Georgia.

Chain of Custody for Environmental Samples

The possession of samples must be traceable from the time of collection until they are analyzed by the analytical laboratory and the data are validated. To maintain and document sample possession, and ensure that proper analyses are performed on an individual sample, chain-of-custody (COC) procedures must be followed. During sample collection, a COC record (see below) will be initiated, and should include, at a minimum, the following information:

- | | |
|----------------------------------|--|
| 1) Project or Company Name; | 7) Required Chem/Phys Analyses; |
| 2) Name of Sampler(s); | 8) Preservatives Added to Samples; |
| 3) Sample Identification Number; | 9) Overnight Courier; |
| 4) Date of Sample Collection; | 10) Signatures Documenting Change of Sample Custody; and |
| 5) Time of Sample Collection; | 11) Contact and Phone Number. |
| 6) Location/Station Sampled; | |

COC forms will accompany field samples at all times. When transferring possession of the samples, the individuals relinquishing and receiving the samples will sign, date, and note the time of transfer on the COC form. The samples will remain in the physical possession of the person assigned to the samples until they are transferred to another individual, shipped to the laboratory, or placed in locked storage. A copy of the

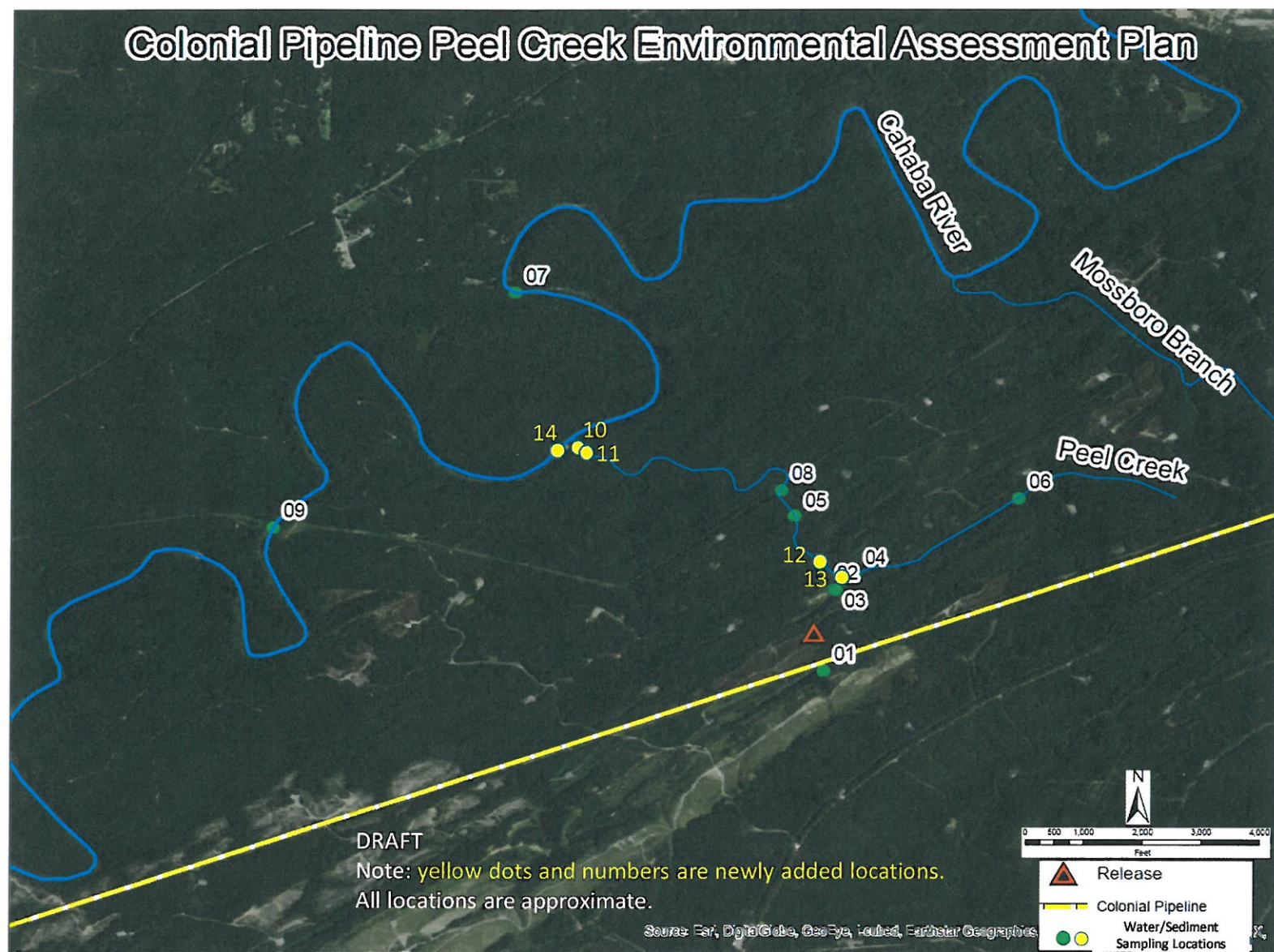
completed COC form will be returned to the EPS Data Manager, and the original COC form should accompany the sample to the processing laboratory or the analytical laboratory. It should be sealed in a watertight Ziploc® -type bag, and taped to the underside of the lid of the shipping cooler. The shipping cooler should be taped closed (custody sealed) to prevent samples from being tampered with in any way.

Schedule and Summary

The information presented herein provides an overview of the initial information and activities associated with the environmental assessment. This information represents initial data collection activities to determine potentially affected media, habitats, the extent of oiling, and initially affected resources. The short-term sampling and monitoring plan will be updated over the next 24 to 48 hours based upon the ongoing events related to the spill, and agency and Colonial input.

As the site cleanup progresses, we will likely transition from a daily sampling program to a less frequent (e.g., every 3 days to weekly) sampling program as dictated by Colonial and the agencies.

Figure 1. Sampling locations in the area of concern.



Attachment A

General Sampling and Analysis Protocols

GENERAL INFORMATION

There are a variety of materials (e.g., petroleum hydrocarbons, organic and inorganic chemicals, and mixtures of hazardous substances) that could be released during an oil spill. These materials could possibly affect a variety of substrates and matrices (e.g., water, soil, sediments, plant or animal tissue). There have also been numerous advances in measurement techniques for chemicals and toxicity. As a result, any list of chemical and toxicity test methods can become outdated, and methods should be discussed with Colonial experts prior to selection.

This Attachment includes protocols for sampling oil, surface water, and sediments during the immediate response with selected analyses that include Total Petroleum Hydrocarbon (TPH) - Gasoline Range Organics (GRO), Diesel Range Organics (DRO), Polycyclic Aromatic Hydrocarbons (PAHs), and Benzene, Toluene, Ethylene, Xylene (BTEX) depending upon the media sampled.

It should be noted that, whenever possible, approved methods should be used for sampling and to conduct the various chemical and toxicity tests that may be required during an assessment. In many cases, however, modifications to the approved methods may be required (particularly when lower detection limits are required). Any modifications to standard procedures should be carefully documented in a Quality Assurance Project Plan.

It should also be noted that the specific analyses that will be conducted for a particular event can vary based on the product spilled and other factors.

Lastly, although the procedures outlined in Appendix A use the term "oil", this term can also represent "product" as was released as part of the CR-91 incident.

INFORMATION ON SAMPLE COLLECTION PROCEDURES

Wherever possible, use standard or approved methods for sampling and analyzing samples.

- Avoid cross-contamination of samples by carefully cleaning sampling equipment and/or by using disposable equipment (where appropriate). Latex gloves (or nitrile gloves if needed for personal protection) should be worn to avoid cross-contamination, and changed between each sampling location.
- Store and ship product (oil) samples in separate coolers from the environmental (water, sediment, and soil) samples to avoid possible contamination.
- Collect an appropriate volume of sample in pre-cleaned sample containers.
- Samples should be preserved, as necessary, using the appropriate preservatives (e.g., hydrochloric acid, 10% formalin, ethanol, ice, etc.).
- Document the time, location, and methods for sample collection using sample labels and field data sheets.
- Document and maintain sample custody using Chain-of-Custody forms.
- Complete sample log procedures to track which samples are to be analyzed immediately, and which samples are to be analyzed at a later date. All analyses are to be completed within the prescribed holding times for the samples and analytical techniques.
- Implement additional Quality Assurance/Quality Control (QA/QC) procedures including collection of representative samples, calibration of field instruments, use of field blanks, replicate analyses, calibrating laboratory instruments, analysis of spiked samples, analysis of standards and reference test materials.

SAMPLING PROCEDURES FOR SOURCE OIL

Source oil (also called **product** or **neat oil**) is oil which has had no contact with the environment, and should therefore be sampled directly out of the pipeline. However, it may not always be possible or practical to collect source oil. For example, a fire at the source of the pipeline leak will hinder collection of source oil. Personal protection is always of highest priority. Personal protection equipment should be worn when collecting source oil. If the necessary safety equipment is not available, collection of the source oil must be delayed until safety equipment is available.

- 1) Sample containers should be prepared in accordance with the specific laboratory analyses being performed and in compliance with USEPA Protocols (USEPA, 1991). Sample containers should be provided either by the laboratory performing the analysis or an independent supplier. Wherever possible, samples should be collected in duplicate containers in case of breakage.
- 2) Approximately 100 ml of source oil is needed for analysis. Source oil can be collected in either three (3) 40 ml VOA vials, or one (1) 4 oz. wide-mouth, Teflon-lined jar (125 ml).
- 3) Fill out sample labels with date, time, unique sample ID, analyses to be conducted, and sampler's initials.
- 4) If source oil is accessible by hand, the oil can be directly collected in the jar. Alternatively, a sterile disposable scoop may be used to collect the oil.
 - a. If source oil is not accessible by hand, a remote sampler may be used.
- 5) Dry and clean the outside of the bottles thoroughly, and place corresponding labels on jars. Complete the sample collection data sheet, make any needed notes in the field log, and complete the Chain-of-Custody form.
- 6) Place samples in a designated cooler with frozen "Blue-Ice" or ice to maintain a temperature of 4°C. **This cooler should only contain source, fresh, or weathered oil samples in order to avoid contamination of the environmental samples.**
- 7) Chain-of-Custody (COC) forms should be signed and placed in a waterproof bag and sealed in the cooler. Where necessary, make a copy of the COC form before sealing it in the cooler. The samples should be relinquished to the carrier (carrier does not need to sign COC) or lab personnel, if hand delivered. The shipping slip should be kept on file to track the samples.
- 8) Samples should be shipped for delivery the following day or hand delivered the following morning.

SAMPLING PROCEDURES FOR FRESH AND WEATHERED OIL

Fresh oil is oil which has recently spilled into the environment (aquatic or terrestrial) and has had limited opportunity for degradation (weathering). Fresh oil is typically found and collected in the slick, near the source. Wear personal protection equipment while sampling fresh oil.

Weathered oil is oil which has spilled from the source into the environment (aquatic or terrestrial) and has remained in the environment long enough for degradation/change (weathering) of the oil to occur. Oil weathers over time, therefore "weathered oil" is a generic term to describe many stages of degradation. In order to properly document the degradation of the oil over time, several samples of weathered oil are usually needed. Weathered oil samples may consist of the floating oil slick, mousse, or oil deposits on the shoreline. Sampling locations should be well documented.

- 1) Sample containers should be prepared in accordance with the specific laboratory analyses being performed and in compliance with USEPA Protocols (USEPA, 1991). Sample containers should be provided either by the laboratory performing the analysis or an independent supplier. Wherever possible, samples should be collected in duplicate containers in case of breakage.
- 2) Oil samples should be collected in two (2) 1.0 liter, pre-cleaned amber bottles or vials (as appropriate). If the oil has solidified, 4 oz. wide-mouth, Teflon-lined jars can also be used.
- 3) Fill out sample labels with date, time, unique sample ID, analyses to be conducted, and sampler's initials.
- 4) For each oil sample, the oil should be skimmed off the surface of the water or land using the bottle or a sterile disposable scoop if needed. The amount of non-oil collected (water or soil) should be minimized.
- 5) Dry and clean the outside of the bottles thoroughly, and place corresponding labels on jars. Complete the sample collection data sheet, make any needed notes in the field log, and complete the Chain-of-Custody form.
- 6) Place samples in a designated cooler with ice to maintain a temperature of 4°C. **This cooler should only contain source, fresh, or weathered oil samples in order to avoid contamination of the environmental samples.**
- 7) Chain-of-Custody (COC) forms should be signed and placed in a waterproof bag and sealed in the cooler. Where necessary, make a copy of the COC form before sealing it in the cooler. The samples should be relinquished to the carrier (carrier does not need to sign COC or lab personnel, if hand delivered). The shipping slip should be kept on file to track the samples.
- 8) Samples should be shipped for delivery the following day or hand delivered the following morning.

SAMPLING PROCEDURES FOR SURFACE WATER: TPH-GRO AND BTEX ANALYSES

- 1) Sample containers should be prepared in accordance with the specific laboratory analyses being performed and in compliance with USEPA Protocols (USEPA, 1991). Sample containers should be provided either by the laboratory performing the analysis or an independent supplier. Wherever possible, samples should be collected in duplicate containers in case of breakage.
 - a. Water samples for **BTEX and TPH-GRO** analysis should be collected in two (2), 40 ml glass vials containing HCl to reduce the pH to < 2 units.
- 2) Fill out sample labels with date, time, unique sample ID, analyses to be conducted, sampler's initials, and sample preservatives if any.
- 3) **For BTEX and TPH-GRO Analysis:** One (1) of the two liters filled above should be used to fill the 40 ml glass vials, leaving no headspace. The remaining sample should be used for TPH analysis.
- 4) Dry and clean the outside of the bottles thoroughly, and place corresponding labels on jars. Complete the sample collection data sheet, make any needed notes in the field log, and complete the Chain-of-Custody form.
- 5) Place samples in a designated cooler with frozen "Blue-Ice" or ice to maintain a temperature of 4°C. **This cooler should not contain any source, fresh or weathered oil samples in order to avoid contamination of the environmental samples.**
- 6) Chain-of-custody (COC) forms should be signed and placed in a waterproof bag and sealed in the cooler. Where necessary, make a copy of the COC form before sealing it in the cooler. The samples should be relinquished to the carrier (carrier does not need to sign COC or lab personnel, if hand delivered. The shipping slip should be kept on file to track the samples.
- 7) Samples should be shipped for delivery the following day or hand delivered the following morning.

SAMPLING PROCEDURES FOR SEDIMENT: BTEX AND TPH-GRO ANALYSES

- 1) Sample containers should be prepared in accordance with the specific laboratory analyses being performed and in compliance with U.S. EPA protocols (USEPA, 1991). Sample containers should be provided either by the laboratory performing the analysis or an independent supplier. Wherever possible, samples should be collected in duplicate containers in case of breakage.
- 2) **Soil/Sediment samples collected for BTEX and TPH-GRO analysis** will be collected in three (3), pre-weighed 40 ml glass vials: one preserved with methanol and two preserved with sodium bisulfate.
- 3) Fill out sample label with date, time, unique sample ID, analyses to be conducted, and sampler's initials.
- 4) **Soft Soil or Sediments in Shallow Waters:** The sample can be collected using stainless steel spoons. Samples containerized in 40 ml vials should be collected by pushing a laboratory supplied plastic syringe directly into the spooned sediment. Samples containerized in 4 oz jars can be filled directly from the stainless steel spoon. Care should be taken when filling the jars to minimize headspace. One spoon should be used for each sample to minimize the potential for cross-contamination. Additionally, each spoon should be decontaminated prior to and after sampling.
- 5) **Hard or Rocky Soil, or in Shallow Waters where the Substrate is Hard:** A decontaminated polycarbonate hand core can be used to collect samples. The core tube should be inserted three quarters into the surface, removed and the upper 2-4 inches placed into the 4 oz. jar. Cores should be removed using a wooden dowel covered with sterile aluminum foil and by pushing the sediments through the core from the bottom. The sample should be collected leaving as little headspace as possible.
- 6) **Deep Water Sediment Samples:** A ponar-grab sampler should be used to collect the sediment sample. The sample should then be placed in a 4 oz jar leaving as little headspace as possible.
- 7) Dry and clean the outside of the bottles thoroughly, and place corresponding labels on jars. Complete the sample collection data sheet, make any needed notes in the field log, and complete the Chain-of-Custody form.
- 8) Place samples in a designated cooler with frozen "Blue-Ice" or ice to maintain a temperature of 4°C. **This cooler should not contain any source, fresh or weathered oil samples in order to avoid contamination of the environmental samples.**
- 9) Chain-of-Custody (COC) forms should be signed and placed in a waterproof bag and sealed in the cooler. Where necessary, make a copy of the COC form before sealing it in the cooler. The samples should be relinquished to the carrier (carrier does not need to sign COC or lab personnel, if hand delivered. The shipping slip should be kept on file to track the samples.

- 10)** Samples should be shipped for delivery the following day or hand delivered the following morning.